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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/774,389

02/10/2004

Toshiya Uemura

PTGF-03083

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08/29/2006

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EXAMINER

LOUIE, WAI SING

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/774,389	Applicant(s) UEMURA, TOSHIYA	
	Examiner Wai-Sing Louie	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/8/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 7, 14-15, 17, and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Spaeth (US 5,814,870).

With regard to claims 1 and 17, Spaeth discloses a semiconductor component (col. 5, line 47 et seq. and fig. 1), comprising:

- A semiconductor light-emitting element 2 including a substrate 8, where the light radiates from a light-emitting surface 20 of the substrate 8 of the light-emitting element 2, the light emission surface 20 being provided on the substrate 8 opposite to an electrode forming surface 9 of the substrate 8 (col. 5, lines 47-62 and fig. 1);
- A transparent structure 14 mounted on the light-emitting surface 20 of the substrate 8, where the transparent structure 14 is optically connected with the light-emitting surface 20 and has a light distribution characteristic based on a three-dimensional shape of the transparent structure 14 (col. 6, lines 5-7 and fig. 1).

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With regard to claim 2, Spaeth discloses the transparent structure 14 has a length in the horizontal direction greater than that of the semiconductor light-emitting element 2 (fig. 1).

With regard to claim 3, Spaeth discloses the transparent structure 14 has a thickness of half of that of the semiconductor light-emitting element 2 to twice of the length of a shorter side of the semiconductor light-emitting element 2 (fig. 1).

With regard to claim 4, Spaeth discloses the transparent structure has a microscopic uneven surface to diffuse light (col. 3, lines 48-61).

With regard to claim 7, Spaeth discloses two electrode connectors 17 coated with metallic film 25 (col. 6, lines 38-39), which do not transmit light.

With regard to claims 14-15 and 19-20, Spaeth discloses the transparent structure 14 is bonded to the substrate 8 by transparent adhesive 13 (col. 6, lines 1-5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth (US 5,814,870) in view of Nagai et al. (US Pub. 2002/0039001).

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With regard to claim 5, Spaeth does not disclose the transparent structure 14 has a reflection layer formed on the surface. However, Nagai et al. disclose a mask over the substrate (Nagai paragraph [0066]). Nagai et al. teach the mask could reduce reflection of external light at the upper surface of the LED (Nagai paragraph [0066]) and reducing the display contrast loss to maintain the quality of the display unit (Nagai paragraph [0031]). Therefore, it would have been obvious to one of ordinary skill in the art to modify Spaeth's device with the teaching of Nagai et al. to form a reflection mask layer on the surface of the transparent structure 14 in order to reduce the contrast loss and maintaining the quality of the display.

Claims 6, 8-9, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth (US 5,814,870) in view of Lowery et al. (US 6,351,069).

With regard to claims 6 and 18, Spaeth discloses one of the lead frame 17 has a cup portion 18 and the transparent structure 14 is fixed on the cup portion 18 through adhesive resin 13, but do not disclose the resin has the light diffusion material mixed in it. However, Lowery et al. disclose the adhesive resin 13 with phosphor (light diffusion material) mixed (Lowery col. 6, lines 64-67). Lowery et al. teach the phosphor can convert the light into a longer peak wavelength to have a secondary color light (Lowery col. 1, lines 22-25). Thus, it would have been obvious at the time the invention was made to modify Spaeth's device with the teaching of Lowery et al. to provide light diffusion material in the adhesive resin in order to convert the light into a longer peak wavelength to have a secondary color light.

With regard to claims 8 and 16, in addition to the limitations disclosed in claim 1 above, Spaeth also discloses:

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- Lead frames that are electrically connected to electrodes 17 formed on the electrode forming surface 9 through wires 11 (col. 5, lines 55-59);
- Light transmitting resin 19 that seals the semiconductor light-emitting element 2 and the transparent structure 14 (fig. 1);
- Spaeth modified by Lowery et al. disclose the resin including a phosphor to wavelength-convert light emitted from the semiconductor light-emitting element 2 (see claim 6 above);
- The transparent structure 14 has a length in the horizontal direction greater than that of the semiconductor light-emitting element 2 (fig. 1).

With regard to claim 9, Spaeth modified by Lowery et al. disclose the resin contains two kinds of YAG phosphors (Lowery col. 5, lines 60-67).

Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth (US 5,814,870) in view of Slater et al. (US 6,791,119).

With regard to claims 10-11, Spaeth discloses the light-emitting element 2 is semiconductor material (col. 5, line 50), but does not disclose the semiconductor material is gallium nitride compound. However, Slater et al. disclose the gallium nitride-based LED is commonly used in the art (Slater col. 7, lines 54-65). Slater et al. teach the gallium nitride-based compound emits predetermined wavelength range and preventing the light generated in the active region from absorbing by the substrate (Slater col. 8, line 58 to col. 9, line 5). Hence, it would have been obvious to one of ordinary skill in the art to modify Spaeth's device with the

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teaching of Slater et al. to employ gallium nitride based compound in the light-emitting element 2 in order to reduce light absorption by the substrate. Spaeth modified by Slater et al. disclose the light-emitting element 2 comprises the substrate, a buffer layer, an n-type semiconductor layer, a light-emitting layer, and a p-type semiconductor layer (Slater col. 7, lines 32-52).

With regard to claim 12, Spaeth modified by Slater et al. disclose the substrate can be structured into a transparent structure, which comprising SiC (Slater col. 12, lines 45-65).

With regard to claim 13, Spaeth modified by Slater et al. disclose the substrate comprises sapphire (Slater col. 1, lines 33-38).

Response to Arguments

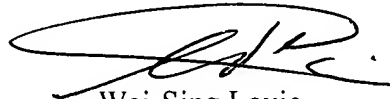
Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Wai-Sing Louie
Patent Examiner

Wsl
August 22, 2006.